

Conformal Components and Snap To

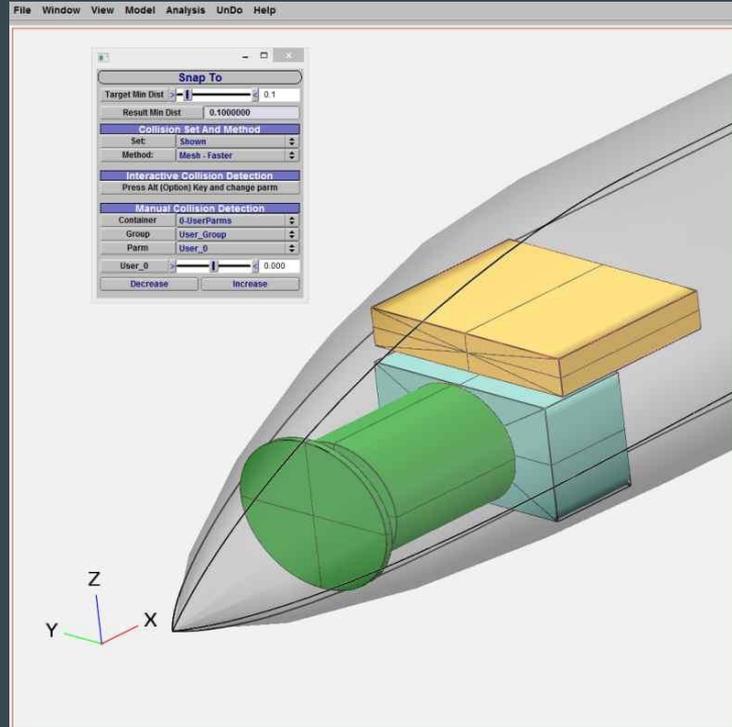
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Snap To Overview

- Easily size and position components within other geometry
- Check clearance between geometry
- Use to check sizing, compute volumes or mass properties
- Examples: fit a satellite dish inside a fuselage or landing gear in a wing

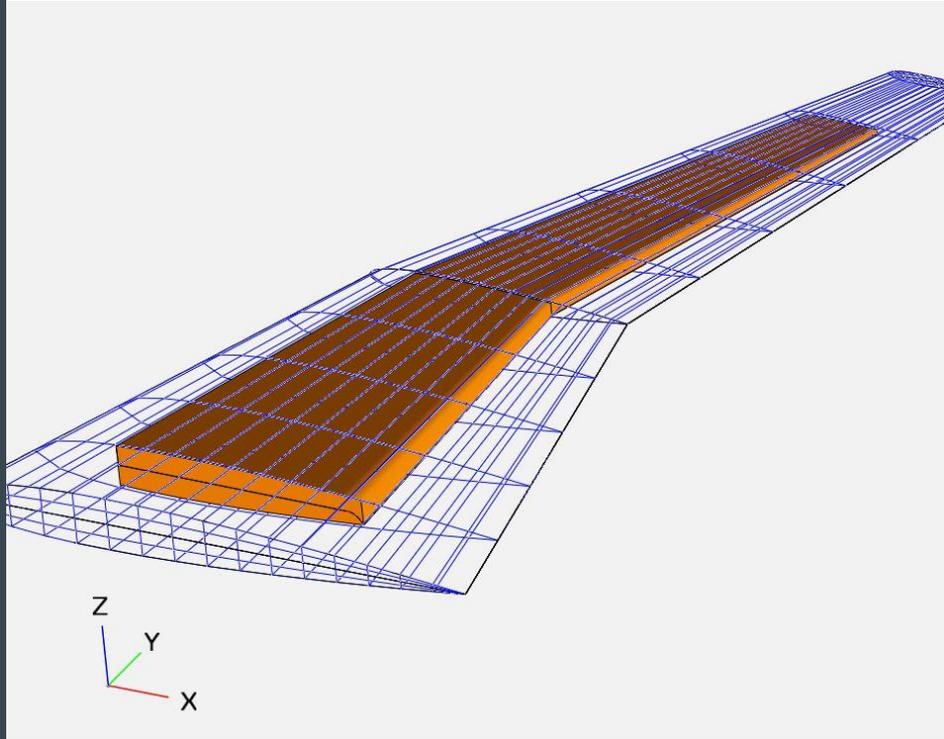
Snap To Example



Conformal Component Overview

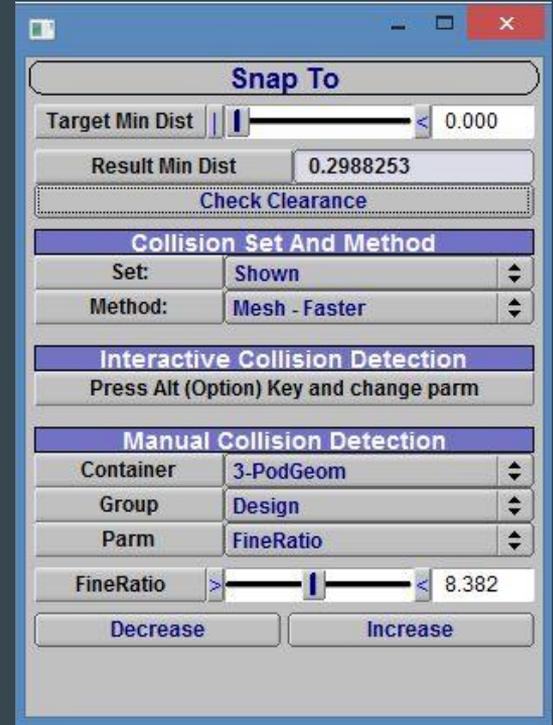
- Develop geometry that derives its shape from parent component
- Shape will change to match parent
- Examples: wing fuel tanks or fuselage cargo pod

Conformal Component Example



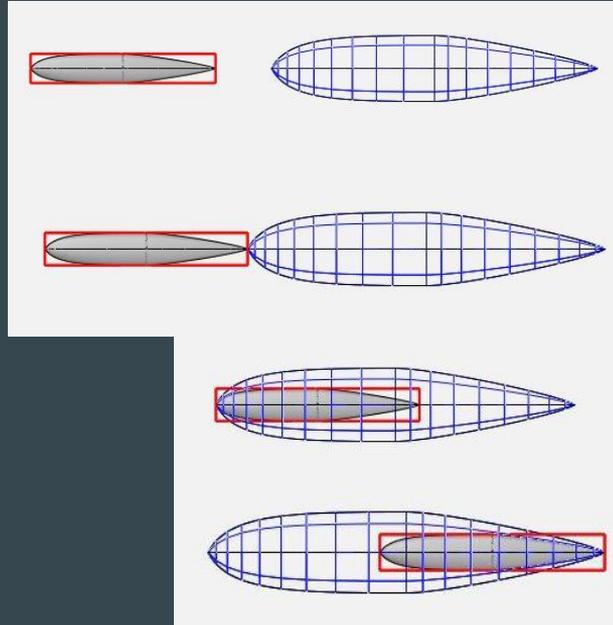
Snap To GUI

- Set min clearance distance
- Pick collision geometry set
- Adjust any parameter until min dist
- Interactive mode - Alt key
- Manual mode - use GUI



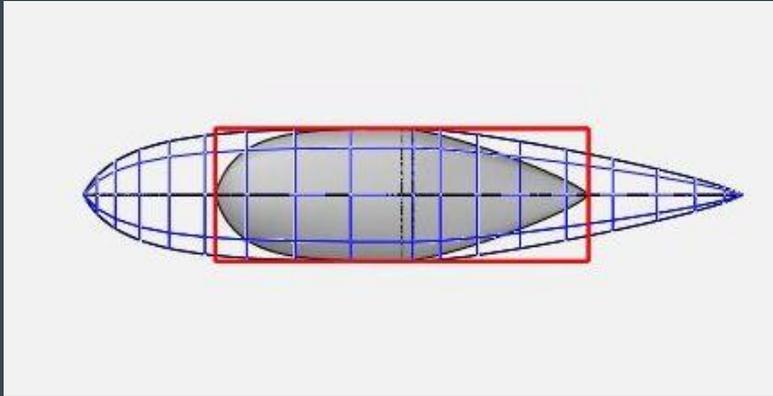
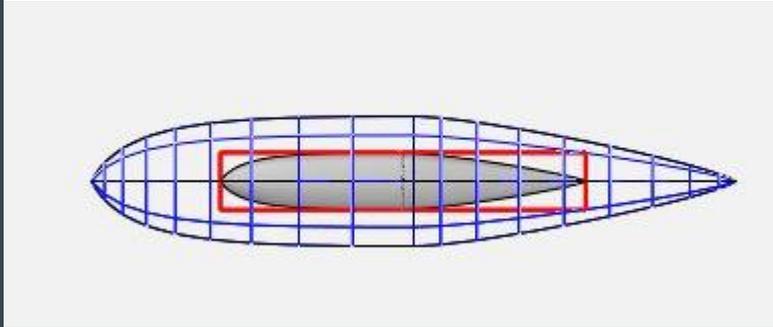
Snap To Usage

Adjust X Location of Small Pod (Holding down Alt Key)



Snap To Usage

Adjust Fine Ratio



Snap To Algorithm

Polygonal based for speed

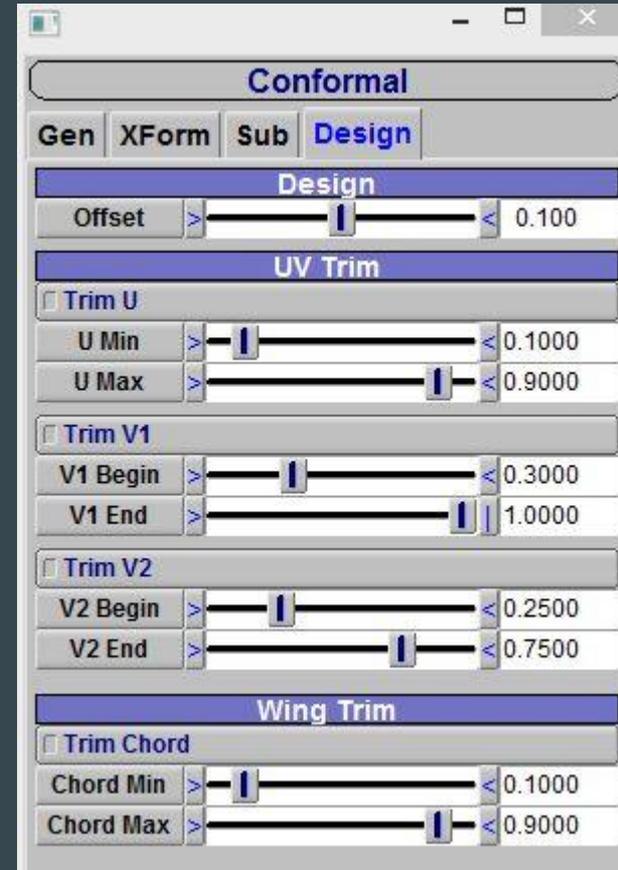
More tessellation = better accuracy

API Functions

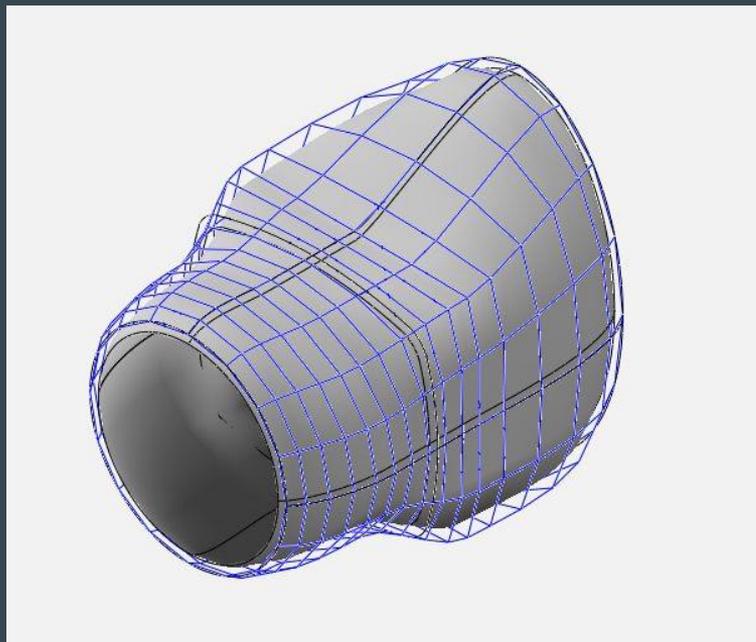
- `ComputeMinClearanceDistance` - compute min dist between geom and set
- `SnapParm` - change parm until specified clearance is reached

Conformal Components

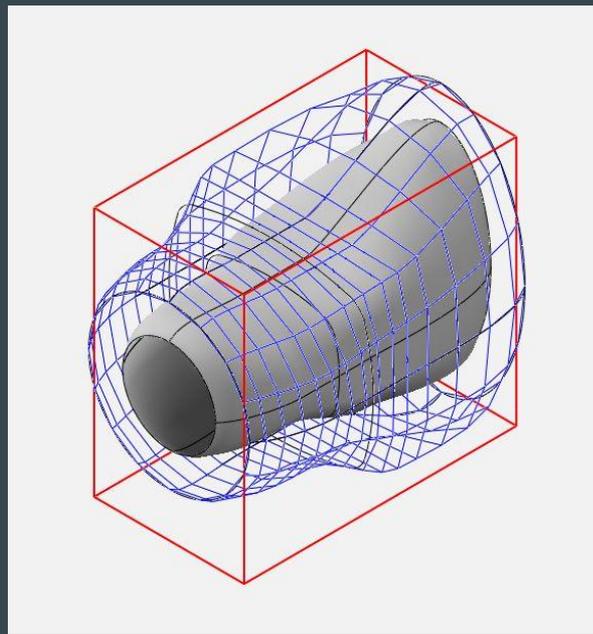
- Use Conformal type
- Add as child of desired geometry
- Set offset (distance from parent surface)
- Set optional trim values
- Conformal geom is automatically attached to parent



Conformal Offset

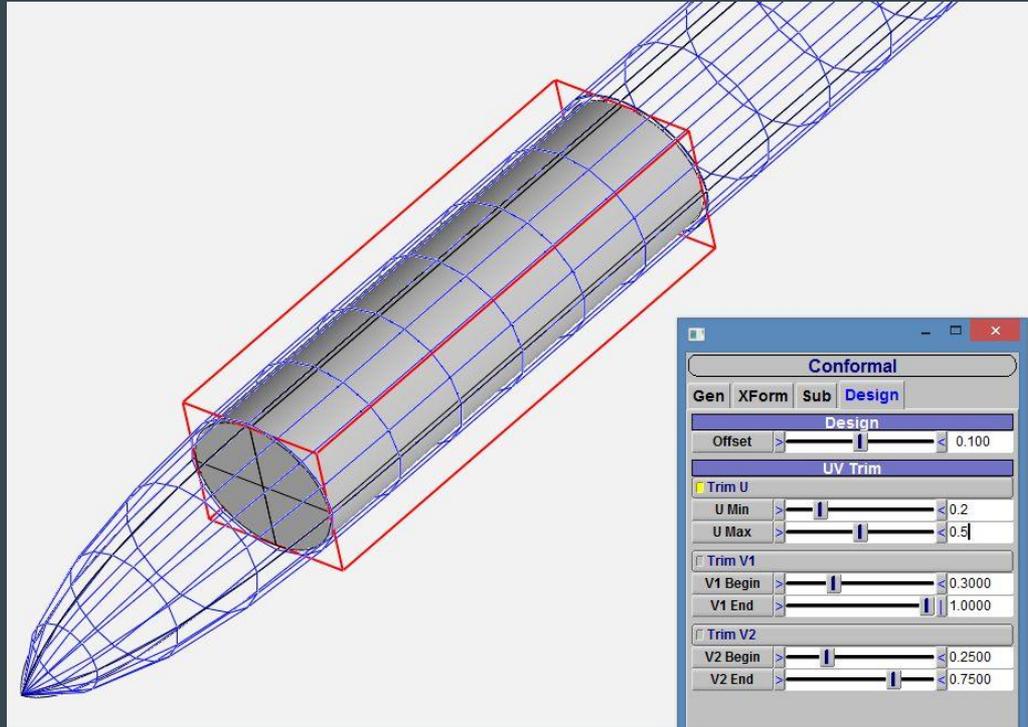


Offset = 0.1

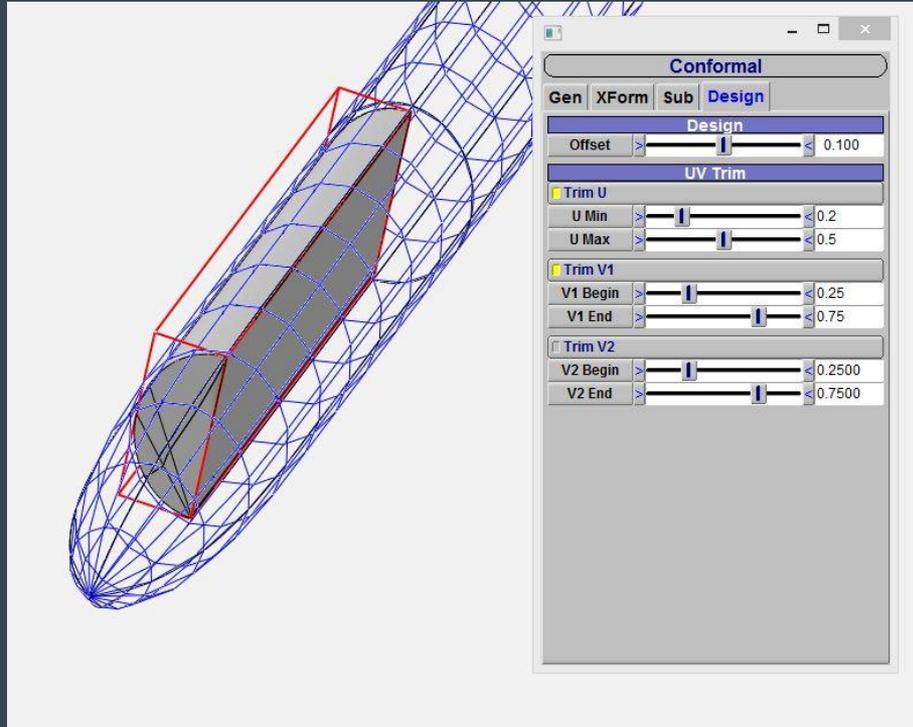


Offset = 0.5

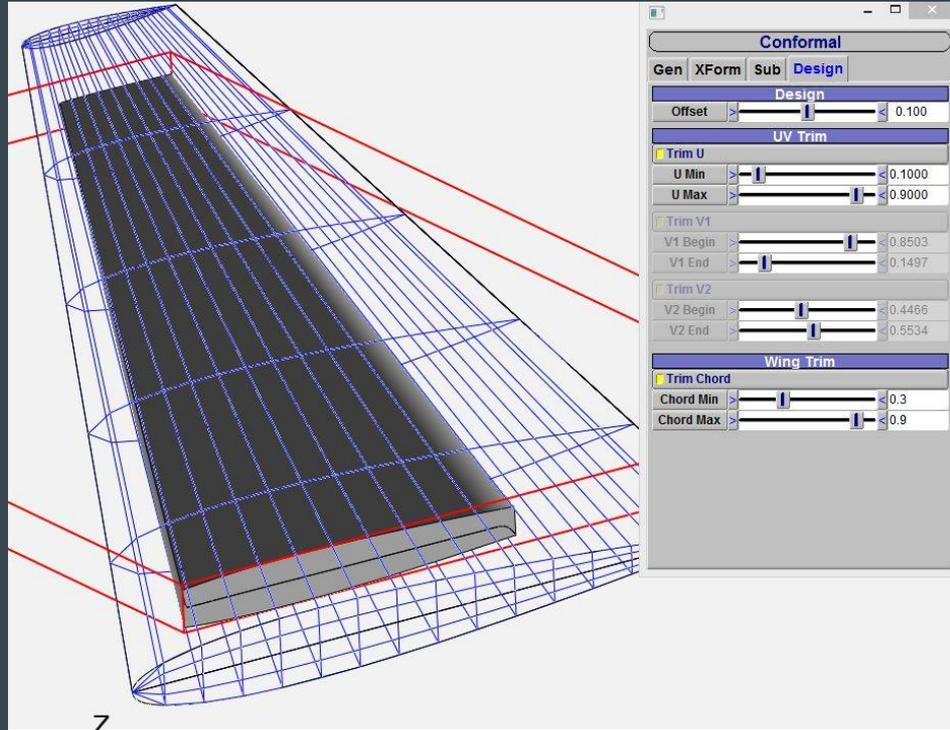
Conformal U Trim



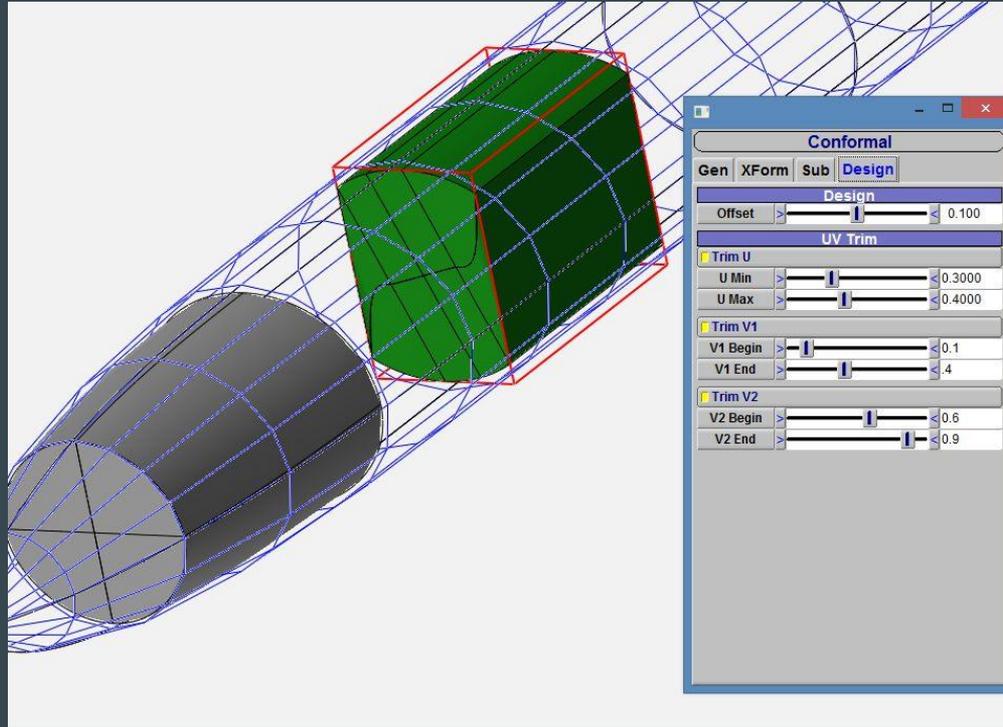
Conformal V Trim



Conformal Wing Trim



Multiple Conformal Same Parent



Conformal Algorithm

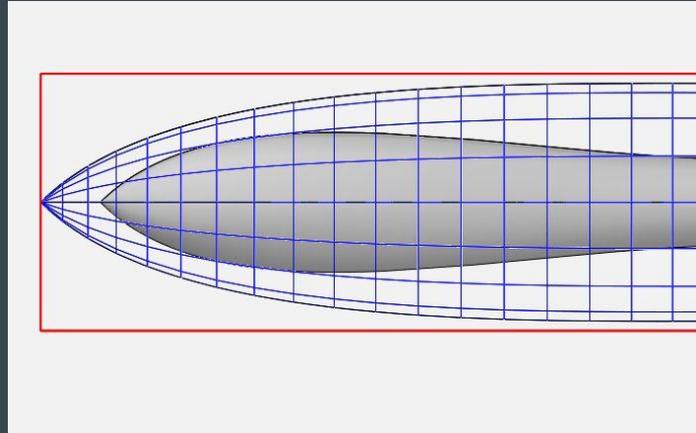
Offset Surfaces

- Fixed distance from another surface
- No exact solution
- Computationally expensive
- Difficult to implement robustly (self intersections)

Conformal Algorithm

Offset Cross-Section Curves and Reskin

- Fast
- Fairly robust
- Not accurate in some cases



Conformal To Do

- More Testing
- API
- Improve accuracy (skinning optimization?)